

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

PUBLICATION NUMBER : 63041795  
PUBLICATION DATE : 23-02-88

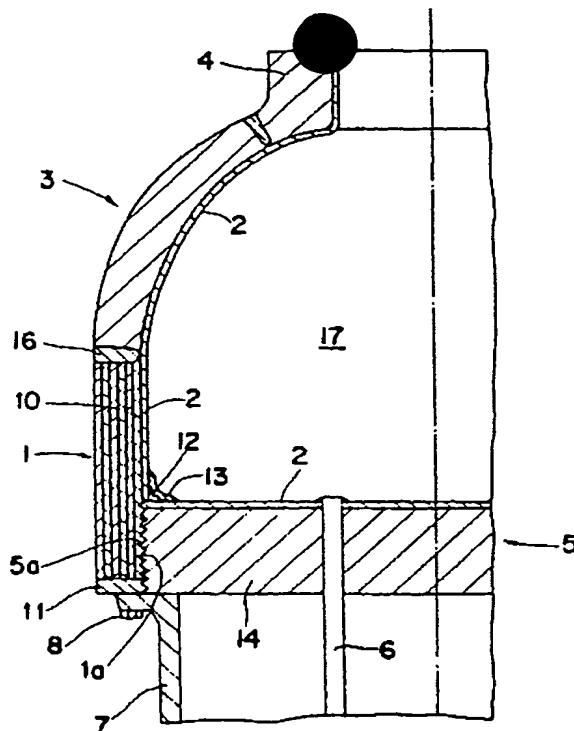
APPLICATION DATE : 06-08-86  
APPLICATION NUMBER : 61185947

APPLICANT : KOBE STEEL LTD;

INVENTOR : ONAKA MASAO;

INT.CL. : F28F 19/06 F28F 9/02

TITLE : MULTI-TUBED, CYLINDRICAL HEAT EXCHANGER



**ABSTRACT :** **PURPOSE:** To provide a compact heat exchanger in which heat conducting pipes are arranged without occupying an unnecessary space and securely connected by a constitution in which the inner surface of the shell has a clad layer and a pipe plate consists of a flat disc having a male thread on its outer circumference which engages a female thread on the inner surface of the shell for fixing.

**CONSTITUTION:** The shell 1 has on its inner surface a clad layer 2 consisting of an anti-corrosive metallic material such as zirconium, stainless steel etc., and comprises a multi-layered cylinder which, on account of a fact that the outer layer tightens the inner layer, make use of the so-called outer pressure effect in order to equalize the stress when in use. The end plate 3 is butt-welded all around to the shell 1, and has a nozzle 4 on its top and a same clad layer 2 on its inner surface. A pipe plate 5 has a same clad layer 2 bonded to one side of a flat steel disc, and is screwed by engaging a male thread 5a on its outer circumference with a female thread 1a on the inner surface at an end of the shell 1. As the clad made of the anti-corrosive metallic material on the pipe plate 5 is completely bonded to the base steel, and heat conducting pipes are arranged without occupying an unnecessary space and are securely connected, the heat exchanger can be improved in its quality and made compact.

COPYRIGHT: (C)1988,JPO&Japio